Nutritional support and quality of life in cancer patients undergoing palliative care

V. PREVOST, PHARMd, PHD, Université de Caen Basse-Normandie EA 3936, Inserm U 1086 – Cancers & Préventions – and Centre Régional de Lutte Contre le Cancer François Baclesse, Caen, & M.-C. GRACH, MD, Equipe Mobile de Soins Palliatifs, Centre Régional de Lutte Contre le Cancer François Baclesse, Caen, France


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In palliative care, the nutrition provided has to be tailored to the patient’s needs, enhancing patient comfort and quality of life (QoL). We conducted a literature search to review methods of measuring QoL, and modalities of nutritional intervention and their influence on QoL of cancer patients in palliative care. Original papers published in English were selected from PubMed database by using the search terms, palliative medicine, cancer, nutrition and quality of life. Specific tools that are particularly recommended to assess QoL in a palliative care setting are reviewed. The main goal in palliative care is to maintain oral nutrition by providing nutritional counselling. Enteral nutritional support showed inconsistent effects on survival and QoL. An evidence-base for parenteral nutrition is still lacking. Ethical considerations concerning provision of food and hydration in end-of-life care are discussed. Nutritional status should be assessed early and regularly during treatment using appropriate tools. In the particularly acute context of palliative care, optimal patient management requires adequate education and counselling to patients and families. Meaningful interactions between the patient, caregivers and medical team would also increase the chance of resolving nutrition-related issues and help to fulfil each patient’s specific nutritional needs and thus improve the QoL.

Keywords: cancer, nutrition, palliative care, quality of life, supportive care.

INTRODUCTION

According to the World Health Organization definition, palliative care improves the quality of life (QoL) of patients and their family members, by providing relief from distress, allowing patients to live as actively as possible, and helping to integrate the psychological and spiritual aspects of patient care. If the goal of palliative care is to improve the patient’s QoL, then nutrition has a key role here. Patients with advanced cancer present digestive symptoms that directly interfere with their capacity to eat and drink, leading to deteriorating nutritional status and dehydration. Malnutrition occurs in approximately 40–80% of cancer patients and more than 20% of cancer deaths can be attributed solely to clinical malnutrition (Ottery 1996). A simple, standardised and affordable nutrition assessment programme can identify cancer patients who may benefit from dietary counselling or may require a thorough nutritional evaluation to guide nutritional support. The aim of nutritional care in cancer patients is to restore or maintain nutritional and functional status, increasing comfort and improving survival. However, towards the end of life, the emphasis of care should be on relief from suffering, further complications and other factors that impact QoL adversely (Acreman 2000).
Health-related QoL and nutritional status of cancer patients are assessed with questionnaires. It is beyond the scope of this review to cover these tools exhaustively, but a selection of clinically relevant and validated palliative care-adapted tools is presented. Issues related to the QoL of cancer patients in palliative care are addressed in three sections: measurement of QoL, nutritional assessment, and modalities of nutritional intervention and their influence on QoL.

METHODS

For this review, original papers published in English were selected from PubMed database and from the reference lists of selected papers and reviews, using as search terms: palliative medicine, cancer, nutrition and quality of life.

MEASUREMENT OF QUALITY OF LIFE IN PALLIATIVE CARE PATIENTS

Health-related QoL is a complex and multidimensional concept and there are as many definitions as there are observers. A lot of what we believe about QoL is intuitive or based on clinical impressions or on research results from other areas. Little has been subjected to scientific scrutiny or validation, particularly in the field of palliative care. According to most authors, the most important domains in defining QoL of cancer patients are physical, psychological and social. Donovan et al. (1989) advised a holistic approach including spiritual measures as well.

Quality of life assessment must be as specific as possible and address the patient’s concerns by self-assessment techniques, as estimates of caregivers, whether medical or family members appear to match very poorly with estimates by the patient himself (Present 1981). Methodological challenges in studying the health care experiences of palliative care patients and their families requires short protocols and simple questionnaires in view of the particularly high vulnerability of patients (Addington-Hall 2002). The most frequently used QoL tools validated for palliative care are presented in Table 1. The different questionnaires often vary in their main focus. Among the available tools, questionnaire QLQ-C30 from the European Organization for Research and Treatment of Cancer (Bottomley et al. 2005) incorporates nine multi-item scales: five functional scales, three symptom scales and a global health and QoL scale. This questionnaire is a reliable and validated measure of the QoL of cancer patients; it is however considered by most authors as not suitably adapted to palliative situations (Saltel & Bachmann 1998). Some other tools such as the McGill Quality of Life Questionnaire (Cohen et al. 1997) are more appropriate in this context. The French ‘Haute Autorité de Santé’ suggests the use of the short form (subscale 9) of the Brief Pain Inventory (Larue et al. 1995), to rapidly assess the impact of pain on daily functions. The advantage of this subscale with seven items is that it is short and easy to use (Larue et al. 1995). QoL can also be specifically assessed in a palliative care setting with tools such as the Spitzer Quality of Life, the Assessment of QoL at the end of life or the palliative care QoL instrument as recently reviewed by Marín Caro et al. (2007a). A daily, simple and overall assessment of QoL using the visual analogical-like scale (such as the global scale of the European Organization for Research and Treatment of Cancer questionnaire) can be very informative and turns out to be more sensitive to

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Number of items</th>
<th>Validated/self-administrated</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>EORTC QLQ-C30</td>
<td>30</td>
<td>Yes/yes</td>
<td>Five functional domains (physical, role, cognitive, emotional, social)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Three symptom scales (fatigue, pain, nausea and vomiting)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Single items for symptoms (shortness of breath, loss of appetite, sleep disturbance, constipation, diarrhoea) and financial impact of the disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Two global items (health, overall QoL)</td>
</tr>
<tr>
<td>MQOL</td>
<td>20</td>
<td>Yes/yes</td>
<td>Five domains: physical well-being, physical symptoms, psychological, existential and support</td>
</tr>
<tr>
<td>BPI-sf</td>
<td>7</td>
<td>Yes/yes</td>
<td>One single-item global QoL</td>
</tr>
<tr>
<td>SQLI</td>
<td>5</td>
<td>Yes/no</td>
<td>General activity, mood, walking ability, normal works (includes both outside the home and housework), relations with other people, sleep, enjoyment of life</td>
</tr>
<tr>
<td>AQEL</td>
<td>22</td>
<td>Yes/yes</td>
<td>Activity, living, health, support and mental well-being</td>
</tr>
<tr>
<td>PQLI</td>
<td>28</td>
<td>Yes/no</td>
<td>Physical, psychological, social and existential domains</td>
</tr>
</tbody>
</table>

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer QLQ-C30 questionnaire (Bottomley et al. 2005); MQOL, McGill Quality of Life Questionnaire (Cohen et al. 1997); BPI-sf, Brief Pain Inventory-short form (Larue et al. 1995); SQLI, Spitzer Quality of Life (Marín Caro et al. 2007a); AQEL, Assessment of QoL at the end of life (Marín Caro et al. 2007a); PQLI, palliative care QoL instrument (Marín Caro et al. 2007a).
changes than the more complex tools used for this measure and could therefore be particularly suitable in palliative care (Conroy et al. 2002).

**NUTRITIONAL ASSESSMENT IN PALLIATIVE CARE PATIENTS**

**Physiopathology of malnutrition in advanced cancer patients**

Malnutrition is a particularly common complication affecting both the survival and QoL in patients with advanced cancer. Cachexia is the term used to describe the state of general ill health and malnutrition associated with weakness and progressive weight loss and emaciation. Cachexia occurs in more than 80% of cancer patients before death (Kemp 2001) and is among the relevant causes of death in many cancer patients. Pathophysiology of cancer cachexia syndrome has been described (Dahele & Fearon 2004). In anorexia and cachexia, catabolism is accelerated despite declining food and energy intake. Tumour cells interact with cells within the tumour mass resulting in the production of catabolic mediators which degrade host tissue. Furthermore, the host may mount an aberrant metabolic response to the tumour. In addition to the host–tumour interactions, patient characteristics, including age, level of physical activity and protein metabolism also contribute to cancer cachexia (Dahele & Fearon 2004). Malnutrition and cachexia are frequently accompanied by a much higher incidence of psychological and psychiatric disorders such as depression, which consume the patient, causing a marked alteration of QoL and a drastic reduction of performance status (Ottery 1995). It is therefore crucial to thoroughly assess and identify cancer patients who are malnourished or at high risk of malnutrition and then plan their nutritional care (Holder 2003).

**Evaluation of malnutrition status and risk**

Nutritional assessments conventionally include physical examination, anthropometric measurements and biochemical profiles.

**Anthropometric measurements**

Weight loss is a cardinal feature of cachexia, reflecting an imbalance in energy demand and supply. Some studies suggest that weight loss alone is a powerful end point in studying cachexia and that weight-losing patients have a reduced global QoL (Dahele & Fearon 2004). Body mass index (BMI) is a frequently used measure of body fat, and is determined by dividing the weight [kg] by the square of the height [m]. Among the other frequently applied anthropometric indices, midarm circumference and the triceps skin-fold thickness are simple estimates of body fat and muscle mass respectively. Bioimpedance analysis, an indicator of body composition, is based on the fact that different body tissues possess characteristic conductive and resistive properties.

**Biochemical parameters**

Biochemical tests are also sensitive markers of nutritional status and may indicate subclinical nutrition that is observed in almost all patients with advanced cancer. Albumin, pre-albumin and transferrin are useful biomarkers of protein-energy malnutrition. Serum albumin reflects whole body protein content and is reduced during chronic inflammation and may be used to monitor treatment in patients with cancer anorexia and cachexia (Pasanisi et al. 2001). Pre-albumin was found to be a sensitive indicator of nutritional status in cancer patients and a strong serological predictor of survival in terminally ill cancer patients (Ho et al. 2003). Activation of systemic inflammatory response is common in cachexia and C-reactive protein (CRP) measurement should be included in studies of cachexia. In advanced gastrointestinal cancer, patients with more than 5% weight loss had a higher CRP, lower albumin, lower anthropometry measures, poorer appetite and lower QoL scores (Dahele & Fearon 2004).

**Nutritional assessment questionnaires**

Malnutrition universal screening tool and mini nutritional assessment (MNA) are tools recommended by the European Society for Clinical Nutrition and Metabolism to detect malnutrition (Kondrup et al. 2003). Malnutrition universal screening tool is indicated to correlate patients’ nutritional status to their impaired function, while MNA is indicated for elderly people. Clinical evaluation of cachexia can be effectively assessed by the subjective global assessment (SGA), which estimates the degree of nutritional depletion and identifies patients at risk of malnutrition (Nitenberg & Raynard 2000). The SGA combines subjective and objective information from patient history and examination to categorise patients according to their nutritional status. This screening tool correlates closely with objective parameters such as anthropometric measurements and serum protein levels (Nitenberg & Raynard 2000). The nutrition risk score (Nitenberg & Raynard 2000) is a five-item
questionnaire which involves a dynamic evaluation of weight loss, BMI, appetite, ability to eat spontaneously and intercurrent diseases. This nutritional screening tool is a quick and easy way to identify patients at risk of malnutrition.

Composite markers of complications related to malnutrition

It is necessary to differentiate markers of malnutrition (or indicating patients at risk of malnutrition) such as SGA, MNA or BMI, from markers of complications related to malnutrition such as nutritional risk index (NRI) or prognostic inflammatory and nutritional index (PINI) [Bernard et al. 2007]. NRI and PINI allow identification of malnourished patients at high risk of complications. These markers help to decide and assess nutritional intervention [Bernard et al. 2007]. NRI is a composite score that takes into account the time-course of weight change and the plasma concentration of albumin. This combination of albuminemia and weight loss can actually increase the sensitivity of detection of malnutrition. PINI is a validated predictor of complications and death in critically ill patients. This score combines markers of nutritional status (albumin and pre-albumin) and markers of inflammation (orosomucoid and CRP).

Specificity of malnutrition assessment of in palliative care

In patients undergoing palliative care, global function monitoring may be based on Karnofsky performance status or more comprehensive tools, such as the functional Edmonton Symptom Assessment System [Nekolahchuk et al. 2008], or some domains of a QoL tool [Table 1]. The Edmonton Symptom Assessment System allows assessment of malnutrition in advanced cancer patients by grading of nine common symptoms (pain, fatigue, nausea, depression, anxiety, drowsiness, shortness of breath, appetite and overall sensation of well-being) and is particularly adapted to the palliative situation [Nekolahchuk et al. 2008]. Expression of anorexia, fatigue or other symptoms needs to be integrated into a broader and more complex model which includes the concept of ‘total pain’ and takes into account psychological, social and spiritual distresses [Delgado-Guay et al. 2011].

Several standardised and validated tools can be combined to complement the information provided by anthropometric measurement and biological parameters. Every patient should benefit from an early and periodic assessment of nutritional status.

Nutritional support in palliative treatment

Appropriate nutritional support should ideally be started as soon as the cancer is diagnosed and should be maintained during the entire period of treatment and post-treatment care. The aims of nutritional care in cancer change as the disease progresses. In the early stages of the disease the main goal is to restore or maintain nutritional and functional status, while towards the end of life the emphasis shifts to optimising the QoL and sense of well-being, and alleviating unpleasant symptoms (Acreman 2000). Nutritional support is focused on maintaining adequate hydration, alleviating or controlling symptoms (e.g. nausea and vomiting) and preserving body weight and composition as far as possible (Marin Caro et al. 2007a,b).

When selecting the type of nutritional intervention the wishes of the patient and their family must be taken into account [Acreman 2009]. Nutritional problems have to be identified in order to plan a strategy that needs to be discussed with the patients and their families and reviewed regularly as conditions change [Acreman 2009]. It is also important to educate the family that aggressive feeding and over-feeding, a very common problem that causes conflict between the patient and family, is inappropriate and that when food becomes more of a discomfort than pleasure, the family members and friends can show affection by means other than feeding [Acreman 2009]. In terminally ill patients, it is important to avoid over-treating malnutrition as it could worsen patient’s QoL [Ho et al. 2003]. The relationship between nutritional status and QoL is a critical issue in these patients. Therefore, providing suitable nutritional care and support to palliative care patients should be one of the goals for improving QoL [Acreman 2009].

MODALITIES OF NUTRITIONAL INTERVENTION AND THEIR INFLUENCE ON QUALITY OF LIFE IN PALLIATIVE CARE PATIENTS

The indication for nutritional support in advanced cancer patients remains controversial [Marin Caro et al. 2007a]. Nutritional intervention includes dietary counselling, oral nutritional supplementation (ONS), enteral nutrition (EN) and parenteral nutrition (PN). Nutrition-related issues [feeding problems and appetite loss] are major concerns for patients in palliative care. Hence, tailoring the intervention to each patient’s specific needs is of the utmost importance to improve well-being through nutrition. However, studies dealing with the impact of
nutritional intervention on QoL in palliative care patients are scarce and some are reviewed here.

Dietary counselling

Nutritional counselling consists of giving the patient general or specific recommendations in order to correct the qualitative and quantitative insufficiency in dietary intake, which is frequently observed in advanced cancer patients. The French National Federation of Cancer Centres (Fédération Nationale des Centres de Lutte Contre le Cancer – FNCLCC) has drawn the following conclusions concerning oral feeding for palliative care or terminally ill cancer patients (Bachmann et al. 2003): (1) dietary advice may help to improve feeding and the management of symptoms that interfere with feeding, and (2) specific diets (e.g. low-salt diet) should be stopped or made less strict in order to allow for patients’ food preferences (unanimous decision based on the best available evidence). Nutritional counselling may positively influence QoL beyond its impact on nutritional status as suggested by the fact that reduced food intake and weight loss negatively affect QoL (Dahele & Fearon 2004).

Simple dietary recommendations [Table 2] can significantly increase oral protein-energy intake in palliative care patients in order to maintain adequate nutrition in normonourished patients and to anticipate malnutrition and cachexia. The goals of nutritional support in palliative care should be to minimise food-related discomfort and maximise food enjoyment [Acreman 2009]. A specialised consultation by a dietitian in close liaison with the palliative care team, would make it possible to regularly evaluate and monitor the nutritional status of the patient and to provide advice aimed at maintaining oral nutrition [Nitenberg & Raynard 2000].

Table 2. Simple suggestions for the maintenance of oral nutrition during palliative care

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<tbody>
<tr>
<td>1.</td>
<td>Meals must be fractionated [six to eight small portions per day]; favourite food should be presented; set an attractive table tray or plate.</td>
</tr>
<tr>
<td>2.</td>
<td>Food restriction should be avoided whenever possible.</td>
</tr>
<tr>
<td>3.</td>
<td>Suppress strong smells that adversely affect appetite in food preparation and presentation [hot foods are more aromatic than the same foods served at room temperature or cold]; plastic eating utensils and non-metal cooking container should be tried in patients with specific taste aversions.</td>
</tr>
<tr>
<td>4.</td>
<td>‘Rich’ food [sugar, butter, cream, eggs, cheese] is recommended.</td>
</tr>
<tr>
<td>5.</td>
<td>Modify the texture of meal [minced, mixed or liquid] as appropriate according to the symptoms.</td>
</tr>
<tr>
<td>6.</td>
<td>Avoid drinking during meals; avoid hot and spicy food.</td>
</tr>
<tr>
<td>7.</td>
<td>Introduction of new food ideas or supplements must be appropriately timed to optimise acceptance and minimise aversion.</td>
</tr>
<tr>
<td>8.</td>
<td>Around meals: take medications in the middle or at the end of meals; maintain some level of activity; encourage a breath of fresh air prior to the meal.</td>
</tr>
<tr>
<td>9.</td>
<td>Ambiance of meals should be quiet; make meal times social, convivial and enjoyable.</td>
</tr>
<tr>
<td>10.</td>
<td>Feed the patient when hungry; gently encourage; do not nag.</td>
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</table>


Oral nutrition supplementation

Oral nutrition supplementation is indicated when spontaneous oral protein-calorie intake is insufficient despite nutritional counselling. The administration of ONS is an affordable and non-invasive strategy to improve patients’ nutritional status and should always be considered before EN and PN are started.

Many ONS are available. They vary according to the type of protein, energy density, osmolarity, lactose, gluten and fibre content, and formulation [liquid, powder, cream, soup, etc.]. ONS are usually served cold to attenuate their taste, but they can be heated according to the patient’s preferences. Observance of ONS requires a careful explanation of the prescription to both the patient and close relatives. It is preferable to advise patient to take supplements with meal times, to test different available flavours and to avoid using ONS as a meal replacement.

The clinical benefit of oral supplementation in cancer patients could be increased by enrichment with nutrients showing immunomodulatory or anti-inflammatory properties. Among these nutrients, the impact of omega-3 polyunsaturated fatty acids (w-3 PUFA) such as eicosapentaenoic acid (EPA) and docosahexanoic acid, on nutritional status of cancer patients has often been studied. Clinical trials dealing with the impact of ONS supplementation with w-3 PUFA on QoL in palliative stage cancer patients provided rather encouraging results [Table 3].

Although there is no definite consensus on the optimal caloric and protein requirements for cancer patients, in general, when oral intake is less 60% of the needs for more than 7 to 10 days, resort to artificial nutrition [enteral or parenteral] is recommended [Fédération Nationale des Centres de Lutte Contre le Cancer et al. 2006].

Enteral nutrition

Patients having a functional gastrointestinal tract are candidates for enteral support and may be fed by gastric or intestinal feeding tubes. EN simulates the physiological situation more closely than PN. This approach enhances immune competence and reduces risk for infection as compared with PN and is therefore less expensive.
Table 3. Impact of nutritional intervention on quality of life (QoL) in palliative stage cancer patients

<table>
<thead>
<tr>
<th>Study [authors, year/type/subject number]</th>
<th>Type of nutritional support</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davidson et al. 2004/multicentre/107</td>
<td>ONS (enriched with ω-3 PUFA)</td>
<td>Attenuation of the weight loss after 8 weeks associated with improved QoL</td>
</tr>
<tr>
<td>Fearon et al. 2003/multicentre, randomised, double blind/200</td>
<td>ONS (enriched with ω-3 PUFA)</td>
<td>The patients’ lean-body mass and weight increased; QoL improved</td>
</tr>
<tr>
<td>Moses et al. 2004/multicentre, randomised, double blind/24</td>
<td>ONS (enriched with ω-3 PUFA)</td>
<td>Administration of ω-3 PUFA was associated with an increase in physical activity, which may reflect improved QoL</td>
</tr>
<tr>
<td>Fearon et al., 2006/multicentre, randomised, double blind placebo controlled/518</td>
<td>ω-3 PUFA (EPA diethyl ester)</td>
<td>No benefit on weight and lean body mass from single agent EPA in the treatment of cancer cachexia</td>
</tr>
<tr>
<td>Shang et al. 2006/prospective randomised/152</td>
<td>Intensified oral enteral nutrition with or without supplementation with parenteral nutrition</td>
<td>Additional supplementation with parenteral nutrition could have a positive effect on weight loss, body composition and QoL</td>
</tr>
<tr>
<td>Bozzetti et al. 2002/multicentre/69</td>
<td>Home parenteral nutrition</td>
<td>QoL remained stable for 2–3 months before death</td>
</tr>
<tr>
<td>Orrevall et al. 2005/semi-structured interviews/13</td>
<td>Home parenteral nutrition</td>
<td>Positive effect of Home Parenteral Nutrition on QoL and on body weight, level of energy, strength, and activity</td>
</tr>
</tbody>
</table>

EPA, eicosapentaenoic acid; ONS, oral nutritional supplementation; ω-3 PUFA, omega-3 polyunsaturated fatty.

Recommendations of the French FNCLCC (Bachmann et al. 2003) are the following: (1) in the terminal or palliative stage, any complications or discomfort resulting from EN should be reviewed; (2) in the event of any change of treatment, the reasons for the change should be discussed with the patients and their families and their preferences taken into consideration; and (3) gastrostomy in terminal-stage patients is associated with a risk of complications that can be contrary to the objectives of palliative care and is hence contra-indicated.

Concerning the impact of EN on QoL of cancer patients, according to Marín Caro et al. (2007b), a feeding tube is a marker of decreased QoL, not because it negatively influences QoL but because it is used in patients in whom clinical and nutritional conditions impinge on QoL. Enhancement of immune response may be obtained by the use of formulas containing ω-3 PUFA, arginine and nucleotides. However, a recent meta-analysis concluded that data were insufficient to demonstrate a positive effect of EPA on cachexia in advanced cancer patients (Dewey et al. 2007). Moreover, a systematic review conducted to determine the efficacy and potential benefits of enteral nutritional support (ONS or enteral tube feeding) and EPA in cancer patients showed inconsistent positive effects on survival and QoL in palliative care (Elia et al. 2006).

Parenteral nutrition

Parenteral nutrition should only be used when EN is impossible due to a non-functional gastrointestinal tract. This approach is nutritionally efficient but presents specific risks and high costs. The indication for artificial nutritional support in advanced cancer patients remains controversial. Data derived from prospective randomised trials of artificial nutrition showed no beneficial effects for terminally ill cancer patients (Klein & Koretz 1994). No improvement was noted in performance status and QoL.

Patients with advanced incurable cancer and malnutrition have been treated with intensified oral EN. For those who received an additional supplementation with PN a reduction in progressive weight loss, an improvement of body composition, an amelioration of the appetite, less anorexia and an improvement of QoL has been found (Table 3, Shang et al. 2006).

Parenteral nutrition is increasingly delivered at home (home parenteral nutrition, HPN) in many parts of Europe and the USA. Increased use in clinical practice has led to controversies on the clinical indications, management, costs and ethical implications. Moreover, providing HPN requires a certain amount of training in nursing support. In severely malnourished patients with advanced cancer, HPN has been shown to maintain nutritional parameters until death, with a QoL remaining stable till 2–3 months before death (Bozzetti et al. 2002). When patients and their families are interviewed about their experience with HPN, it appears that they associate HPN to benefits such as body weight gain, higher energy, strength and activity levels, and above all security about the fulfilment of the patient’s nutritional needs (Orrevall et al. 2005). The most salient negative effect of HPN described was related to restrictions on family life and social contacts for the whole family. However, benefits of the HPN treatment were generally said to outweigh negative aspects. HPN was viewed as a positive alternative because prior to HPN...
nutrition was described by patients as a source of worry and often desperation (Orrevall et al. 2004). However, the benefit of HPN is often debated in palliative care and further studies for assessing its impact on patient’s QoL are required.

An evidence-base for the utility of PN in palliative care is still lacking (Orrevall et al. 2005). Among patients with a Karnofsky index lower than 40% and an average survival time shorter than 3 months, an improvement of QoL was found in only 9% of the cases (Nitenberg & Raynard 2000). According to the French FNCLCC guidelines, there is indeed no justification for PN in patients with a Karnofsky index of 50% or less, or with a World Health Organization performance status higher than 2 (Bachmann et al. 2003). PN seems inappropriate when a patient enters the terminal phase of the disease (Nitenberg & Raynard 2000). Such patients usually have severely restricted oral intake or are dehydrated, and the decision to administer fluids should be made on the basis of careful assessment that considers problems related to dehydration, the potential risks and benefits of fluid replacement, and the patient’s and family’s wishes (Nitenberg & Raynard 2000).

Hydration

Patients with advanced cancer who have dehydration or decreased oral intake almost always receive parenteral hydration [PH]. The consequences of dehydration in terminally ill patients are still a matter of debate, with arguments for and against fluid administration (Fainsinger & Bruera 1997).

Guidelines of the European Association for Palliative Care proposed a three-step process to reach a decision on the type of treatment support [artificial nutrition vs. hydration] that would best meet the needs and expectations of the patient (Bozzetti 2007). A preliminary study in terminally ill cancer patients showed that application of PH decreased symptoms of dehydration in patients who had decreased fluid intake and that the hydration was well tolerated (Bruera et al. 2005). Dehydration in terminal phase is often considered to be neither painful nor uncomfortable (Bachmann et al. 2003). Nevertheless, it is worth considering that while some dying patients may not suffer any ill effects from dehydration, there may be others who do manifest symptoms, such as confusion or opioid toxicity that might be alleviated or prevented by PH (Fainsinger & Bruera 1997). The complexity about artificial hydration in the terminal stage was demonstrated in a Japanese population-based survey studying knowledge and beliefs about end-of-life. Half of the bereaved families regarded artificial hydration as the minimum standard of care; hence its withdrawal on the grounds that it is a ‘futile’ treatment might not be acceptable for a significant number of patients (Morita et al. 2006). Information and communication with the patient and family about knowledge and beliefs concerning end-of-life care is crucial in order to help them to choose the most suitable nutritional support with full knowledge of the facts.

Besides PH, alternative techniques such as hypodermoclysis or rectal hydration appear to have several advantages in terms of tolerance over other methods of PH (Fainsinger & Bruera 1997). In terminally ill patients, McCann et al. (1994) observed that symptoms of thirst and dry mouth could be alleviated, usually with small amounts of fluids, and/or by the application of ice chips and lubrication to the lips. Indeed, oral care, offering fluids, ice chips, chewing gum, mist or spraying mouth, lubrication of lips and skin can contribute to hydration care (with the possible contribution of the family, if desired). These alternatives to PH are recognised in the French guidelines of the FNCLCC, which established the following recommendations concerning palliative or terminal hydration: mouth washing is an important component of management and symptoms can usually be controlled by subcutaneous administration of 0.5–1.0 L of 0.9% saline solution over 24 h (Bachmann et al. 2003).

To feed or not to feed: ethical considerations for end-of-life patients

Ethical questions are raised concerning the provision of food and fluids to a patient nearing the end of life (Acreman 2009). Starvation and dehydration are directly related to loss of QoL and indeed, might be the leading cause of death. However, the opinion of the medical community is divided: there are those who believe that there is a subset of aphasis advanced cancer patients who die ‘with cancer’ but not ‘because of cancer’ and could potentially benefit from PN; and there are those who believe nihilistically that nutritional support has no place in management of patients with incurable cancer and may sometimes only prolong the process of dying. If the intention behind discontinuation of nutrition and/or hydration is to cease futile treatment, discontinuation is ethically justified and it would be unethical to offer a therapy that could easily worsen the condition of end-stage cancer patient (Jonkers-Schuitema 2004).

Feeding has a powerful symbolic and social significance for patients and their family. Difficulty in eating and drinking often causes an anxiety in the patients’ entourage, who worry that the patient will starve to death (Chiu et al. 2002; Van der Riet et al. 2009). In ter-
minally ill patients, McCann et al. (1994) observed that 63% never experienced any hunger and 62% experienced either no thirst or thirst only initially during their terminal illness. Similarly, in a qualitative study where patients were interviewed about fluid and nutrition intake at the end of life, patients did not complain of hunger or thirst (Van der Riet et al. 2006). Not focusing on food is something the medical team have to learn to understand and also to educate the patients and their relatives (Jonkers-Schuitema 2004). Artificial nutrition and hydration have indeed been shown to constitute prevailing ethical dilemmas related to issues of clinical care (Chiu et al. 2009) and the lack of solutions to these dilemmas inevitably impedes the pursuit of better quality care. Thus, the goals of care for these patients should be re-focused on the promotion of QoL and preparation for a quiet death, rather than on simply making every effort to improve the hydration and nutritional status (Chiu et al. 2002). The family can be made aware that if food causes more discomfort than pleasure, they can show affection by means other than feeding. Delicate care and continuing communication can be helpful in avoiding unnecessary artificial nutrition or hydration (Jonkers-Schuitema 2004).

Optimisation of nutritional support and its impact on QoL within the context of palliative care teams

Palliative care mainly aims at improving the QoL of patients and their families. The clear division of cancer into two phases, antineoplastic treatment and then palliative therapy is not appropriate. The palliative approach should be integrated as a continuum that extends from the earlier stages of the disease throughout the course of illness and may be intensified at the end of the disease (Maltoni & Amadori 2001).

If all the members of the health care team worked towards optimising the patient’s nutritional situation from the time of cancer diagnosis, it might be possible to decrease the number of patients experiencing nutrition-related problems (Orrevall et al. 2004) and requiring PN in the palliative stage (Jonkers-Schuitema 2004).

Nutritional plans should not only start early in active treatment but also be evaluated regularly and continuously (Orrevall et al. 2004). As the physical condition of an advanced cancer patient changes, it is important to ensure that nutritional management is maintained optimal at all times. If any nutritional problem is identified, a nutritional strategy should be discussed with the patients and their families and reviewed as the condition changes.

The provision of optimal nutritional care requires a multidisciplinary approach with physicians, nurses, dietitians, psychologists, social workers, pharmacists, etc., working as a team with adequate facilities and administrative and financial support. There is enough evidence to prove that palliative care delivered by specialist palliative care services is more effective than care delivered by non-specialist teams (Maltoni & Amadori 2001; Morita et al. 2006; Van der Riet et al. 2009). The comprehensive management approach is based on interactions within a multidisciplinary team, and discussing with the patients and their families the treatment goals and meaningful outcomes (Wade & Jain 1984). Along with the disease specialists, specialist palliative care services can be helpful in providing assessment and management of the multicausal malnutrition syndrome as well as psychophysical symptoms and sociospiritual needs of patients at the end of life (Maltoni & Amadori 2001; MacDonald 2005).

CONCLUSION

In advanced cancer patients, particularly at the end of life, guidelines for optimum nutrition are not relevant anymore and the nutritional goals will have to be adapted according to the patient’s and family’s need, enhancing patient comfort and QoL. Well-designed studies aimed at determining the most adequate nutritional support in palliative care patients are warranted in order to help make appropriate decisions regarding patient care. Funding must be provided to develop specific tools, especially QoL instruments, suited to the palliative situation and then apply them clinically, as a part of research protocols relating nutrition and QoL.

A key factor to be considered is communication among all those involved in patient care. Adequate communication skills are required to guide the patient and family or care-givers. Optimal patient management demands adequate education and counselling to patients and their families, to coach them throughout the period of the disease. In a qualitative study of the experiences of advanced cancer patients, some described disorders that severely affected their food intake, which could have been treated if recognised (Orrevall et al. 2004). Patients and their families also reported that the physicians who did inquire about food intake usually did not give advice on how to deal with the eating problem. Meaningful interaction between the patient, the family and the medical team might also increase the chances of resolving nutrition-related issues, and could thus improve the patient’s comfort without additional distress. The development of patient education programmes in the palliative cancer
field by involving the patients themselves in their own care and management, should help to fulfil each patient’s specific nutritional needs and improve the QoL.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

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